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THE MICROSCOPIC APPEARANCES IN ULCEROMEMBRANOUS TONSILLITIS (VINCENT'S ANGINA)

With one plate

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The etiologic relation of fusiform bacilli and the associated spiral organisms now commonly called spirochetes, to the diseases in which they are found is difficult of demonstration on account of the presence of streptococci and other bacteria in cultures; and then the bacilli and spirals so far isolated usually lack virulence for animals. The strongest evidence of an etiologic relation has been furnished by the examination of sections of the involved tissues. Many observers have demonstrated these organisms in noma,[1] at the line of advancing necrosis, where they are found in great numbers, apparently pure, and also in small numbers in the unaltered tissue. The spiral forms have generally been observed in the living tissue in advance of the bacilli (Perthes,[2] Buday[3] and Ellermann[4]).

Vincent,[5] Krebs,[6] and Gross[7] have studied sections of the ulcermembranous lesions of the tonsils, and Ellermann[8] of the uvula. They observed a variety of bacteria, especially cocci in the external necrotic layer; in the middle zone between necrotic and normal tissue a large number of fusiform bacilli, often in palisade arrangement, generally not associated with other bacteria; and a few bacilli alone invading the living tissue, in strands. The inflammation was described as fibrinous, and a variable amount of leukocytic infiltration was observed. Vincent and Ellermann found no spiral forms in the sections; Gross found only a few.

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[1] For a review of the literature see Weaver and Tunnicliff: Jour. Infect. Dis., 1907, 4, p. 8.

[2] Archiv. f. klin. Chir., 1899, 59, p. 111.

[3] Beitrage z. path. Anat. u. z. allgem. Path., Ziegler, 1905, 38, p. 255.

[4] Centralbl. f. Bakteriol., I, O., 1905, 38, p. 383.

[5] Annal. Inst. Pasteur, 1899, 13, p. 608.

[6] Deutsch. Med. Wchnschr., 1902, 28, p. 310.

[7] Deutsch. Arch. f. klin. Med., 1904, 79, p. 369.

[8] Centralbl. f. Bakteriol., I, O., 1905, 38, p. 383.

The ulceromembranous tonsil, described in this report, was removed during life, and the removal proved an effective method of limiting the infection. The case was clinically typical of Vincent's angina. Smears showed large numbers of fusiform bacilli and long spiral organisms with wide undulations.

Sections were stained by Levaditi's method to demonstrate the spiral forms, which are not readily stained by other methods. These sections show the tonsil covered with an exudate (not seen in the figures) containing cocci, a variety of bacilli and a few spiral organisms; under the exudate the external epithelium is necrotic and contains only an occasional coccus, fusiform bacillus and spiral form (Fig. 1, A). The layer between this necrotic tissue and living tissue contains a few leukocytes, a moderate amount of fibrin, and enormous numbers of fusiform and spiral organisms (Fig. 1, B). Their presence in the deeper tissues is probably due to their being anaerobic organisms. The microphotographs give no evidence of the large number of spiral forms present on account of their not lying in one plane, and therefore not easily photographed. The bacilli are often packed together side by side in palisade arrangement. The necrotic lymph follicles are replaced by a mass of fusiform bacilli and spirals, the latter being almost pure in the center of the follicle, the bacilli radiating from them. Living tissue is seen beneath this mass of organisms (Fig. 1, C). The fusiform and spiral organisms invade the living tissue, the latter generally just ahead or considerably in advance of the bacilli (Figs. 2, 3 and 4), being here more numerous than the bacilli.

Sections stained with methylene blue and the Gram-Weigert method show cocci only in the exudate and external layer of the tonsil and not associated with the fusiform bacilli and spirals near and in the living tissue. The coccus-like bodies seen in Figure 3 are sections of the fusospirillar organisms. The bacillary elements, especially the granules, retain the gram stain somewhat, the spirillar elements are completely decolorized.

SUMMARY

Sections of an ulceromembranous tonsil show fusiform bacilli and spiral organisms in enormous numbers in the zone separating the external necrotic epithelium and living tissue. A considerable number are invading the normal tissue, the spirillar forms being the more abundant and in advance of the bacilli. These organisms are apparently not associated with cocci or other bacteria at the line of advancing necrosis.

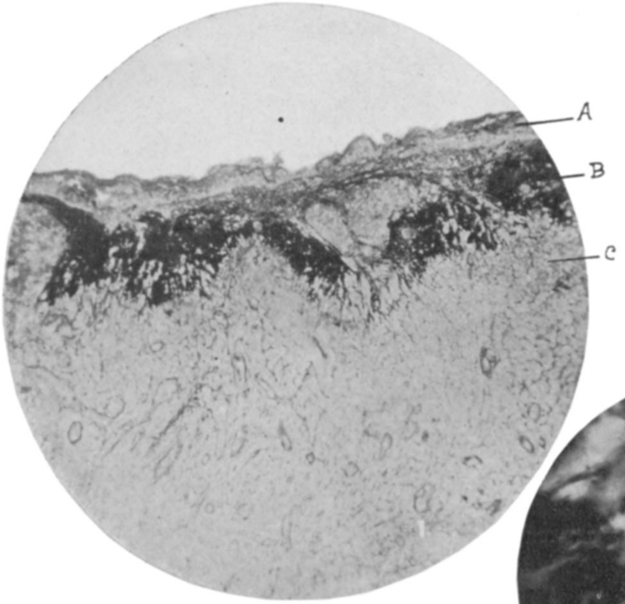
EXPLANATION OF PLATE

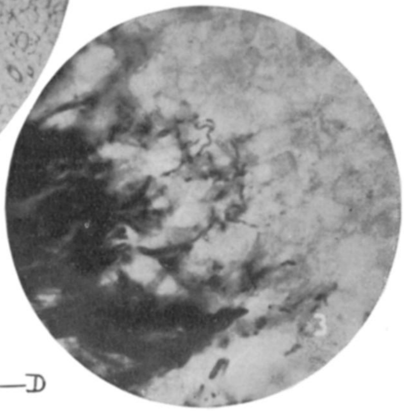
Fig. 1.—Section through tonsil showing external necrotic layer (*A*) containing practically no bacteria; middle layer (*B*) made up of masses of fusiform bacilli and spirochetal forms; living tissue (*C*). Levaditi preparation × 90.

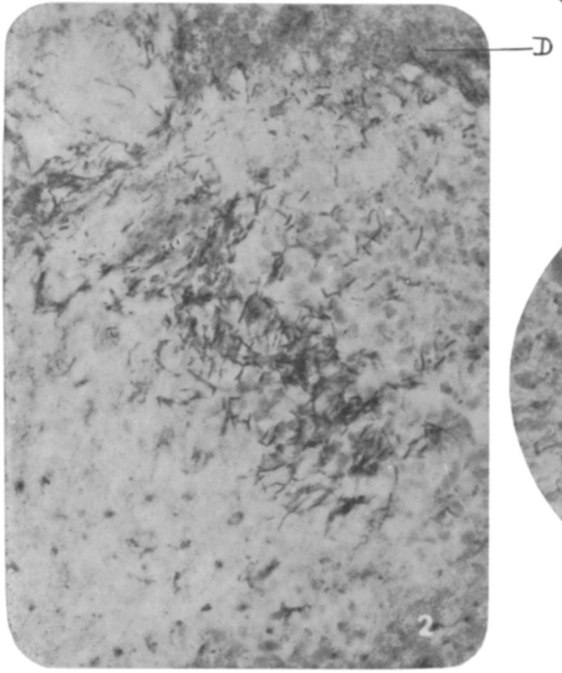
Fig. 2.—Section through edge of middle layer showing the organisms invading living tissue. The spiral forms are in advance of the bacilli. *D* is a mass of spiral organisms. Levaditi preparation × 575.

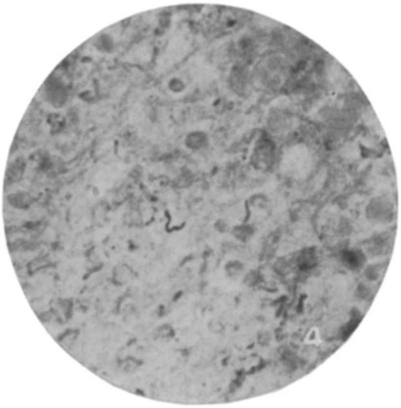
Fig. 3.—Section showing spiral organisms invading living tissue just in advance of the bacilli. Levaditi preparation × 1200.

Fig. 4.—Section showing spiral forms in the living tissue, represented by *C* on figure 1. Levaditi preparation × 1200.









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